

REMARKS

Claim 18 was amended to correct an obvious typographical error. Claims 1, 4-10, 13-16, and 18-23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al., US 4,887,161, in view of Toyoda et al., US 4,420,773.

Watanabe et al. disclose a camera having a removable memory cartridge capable of displaying stored images. A portion of the surface of the memory cartridge is provided with a liquid crystal display device that displays image data and the number of frames stored in a semiconductor image memory. The display can also provide the date of the image, frame number, data indicating the place of photography, and other index information. As shown in Fig. 1, Watanabe et al. disclose a display device powered by solar battery 27. Even though the Watanabe et al. display can be removed from a camera, it is still connected to the solar battery power source.

Toyoda et al. disclose a camera with a removable storing unit 2 with a display device 201 that displays the number of frames that can be stored on the unit. The image pickup unit 1 has a power supply battery E1 and the storing unit has a secondary power supply E2. When the storing unit is separated from the camera, it operates on its own battery supply.

The present invention discloses a camera having a removable image bearing medium for camera captured images. As shown in FIG. 3, memory material 60 is disposed between a transparent top conductor 62 and a bottom conductor 64. The memory material can be a chiral doped nematic liquid crystal capable of maintaining a given condition indefinitely after the medium is removed from the camera. The memory material holds either a reflective or transmissive condition for each segment of memory display. Applicants disclose a power source inside the camera providing voltage to the memory material when the removable image bearing medium is attached to the camera. FIG. 8A shows the voltage forms applied by camera controller 30 to a segment of memory display 37 to write the segment into the reflective mode. Camera controller 30 sets voltage regulator 90 to a low voltage and pulses all segment switches 94 to clear all the

segments with low voltage pulse P_L . Voltage regulator 90 is then set to a high voltage, and selected segment drivers are pulsed with a high voltage pulse P_H to convert those segments to the reflective mode. Fig. 8B is a waveform across a segment that has been kept in the transmissive mode. Because P_H was not applied across that segment, the segment remains in a transmissive, dark condition from P_L . After the write pulses P_L and P_H are applied, memory display 37 will continue to display status information indefinitely *without the use of additional power*.

Claim 1 is believed to be representative of the claims in this case. Claim 1 requires a display disposed relative to the removable image bearing medium so that the display is removable from the camera with the removable image bearing medium, such display responding to an applied power source in the camera for displaying images or information related to captured images and continuing to display such image after removal of the display from the camera and no power is applied.

Neither of the cited references disclose or suggest this feature. Both of the cited references require a power supply for the display after it has been removed from the camera.

The present invention provides an important advantage over these cited references in that it does not require additional complexity and cost associated with a power source such as a solar battery. Moreover, a solar battery is only operable when there is adequate light available.

Watanabe et al. fail to disclose a display responding to an applied power source in the camera for displaying images or information related to captured images and continuing to display such image after removal of the display from the camera when no power is applied, as required by claims 1, 10, and 21 of Applicants' invention. Watanabe et al. clearly rely on a power source, particularly a solar battery, whereas the present invention does not. Toyoda et al. also rely on a battery powered storing unit separate from the camera. Watanabe et al. teach the display viewed in a bright location only. The present invention is not limited to "bright locations" and discloses a method to solve that problem. Clearly, Watanabe et al. never anticipated the use of a display that does not require a power

source when it is removed from a camera. Neither of the cited references disclose a display capable of displaying images on a removable medium without a power source. There is no motivation to combine the cited references because both fail to disclose the same required step. Therefore, it would be unobvious to a person skilled in the art to combine two references that each fail to teach an important part of the present invention, namely the ability to display images on a removable display without a power source. Applicants believe claims 1, 10, and 21 are allowable because they set forth unobvious subject matter.

Rejected claims 4-9 depend on claim 1. Rejected claims 13-16, and 18-20 depend on claim 10. Rejected claims 22-23 depend on claim 21. Applicants believe claims 1, 10, and 21 are allowable. Therefore, all dependent claims should be allowable as well.

Claims 2, 11, and 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al., US 4,887,161 in view of Toyoda et al., US 4,420,773, as applied to claims 1 and 10, and further in view of Doane et al., US 5,695,682.

Watanabe et al. and Toyoda et al. have been discussed above and the arguments are applicable here. As noted by the Examiner, Doane et al. disclose chiral nematic cells of a liquid crystal display which can be excited to a position or color with an electric field and remain stable when the field is absent and then change again when another field is applied (see column 2, lines 34-65). However, Doane et al. do not disclose the use of this display being applied to a removable image bearing medium on a camera. There is no suggestion by Doane et al. that the disclosed display can be used in a camera to provide the advantages of the present invention. Therefore, there is no motivation to combine Doane et al. with Toyoda et al. and Watanabe et al. Furthermore, claims 2, 11, and 17 depend on claims 1 and 10. Applicants believe claims 1 and 10 represent unobvious subject matter. Therefore, dependent claims 2, 11, and 17 represent unobvious subject matter as well and should be allowed.

Claims 3 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al., US 4,887,161 in view of Toyoda et al., US

4,420,773, as applied to claims 1 and 10, and further in view of Gowda et al., US 6,628,333.

Watanabe et al. and Toyoda et al. have been discussed above and the arguments are applicable here. Gowda et al. teaches the use of a printer in a camera. The Gowda reference also discloses a removable instant film cartridge 136 having an integrated power source 138 (see FIG. 5A). After a number of pictures are taken, the cartridge 136 is replaced, which introduces a new integrated power source 138 into the camera. Although they may disclose parts of claims 3 and 12, Gowda et al. fail to suggest or disclose captured images continuing to display such images after removal of the display from the camera and no power is applied, as required by claim 1. Neither Watanabe et al., Toyoda et al., nor Gowda et al. disclose all the features of independent claims 1 and 10. Therefore, there is no motivation to combine these references. It would be unobvious to a person skilled in the art to combine three references which fail to disclose an important feature of the present invention. Furthermore, claims 3 and 12 depend on claims 1 and 10, respectively. Applicants believe claims 1 and 10 to represent unobvious subject matter. Therefore, dependent claims 3 and 12 represent unobvious subject matter as well and should be allowed.

In view of the foregoing, it is believed none of the references, taken singly or in combination, disclose the claimed invention. Accordingly, this application is believed to be in condition for allowance, the notice of which is respectfully requested

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Enclosure

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